

**ABSTRACT**

The present invention is a novel method and an apparatus for implementing the method of inducing a layer of compressive residual stress along the surface of a part comprising the steps of selecting a region of the part to be treated; selecting the magnitude of compression and the residual stress distribution to be induced in the surface of the  
5 selected region of the part; exerting pressure against the surface of the selected region, the pressure being applied in a selected pattern along the surface to form zones of deformation having a deep layer of compressive stress; and varying the pressure being exerted against the surface to produce the desired residual stress distribution and  
10 magnitude of compression within the surface.